

Abstract

A filter element is includes a cylindrical media pack defining a central open volume and a longitudinal axis; a first end cap having a central aperture in flow communication with the central open volume; and a second, closed end cap having a central region closing an end of the media pack central, open volume. The closed end cap includes a projection extending axially outwardly therefrom and positioned at a location intersected by the longitudinal axis. An end cover for an air cleaner includes an inner side including a central projection thereon. Preferably, the central projection comprises a wall that includes an outer perimeter defining a regular polyhedron having at least five sides. An air cleaner comprises a cylindrical filter element having a first open end cap, a second closed end cap, and a cylindrical media pack extending therebetween. The first end cap defines an internal radial seal region. The second, closed end cap has a central region including a circular recessed portion. The air cleaner also includes an end cover. The end cover includes an inner side including a central projection thereon. The central projection is sized and shaped to matingly engage the recessed portion of the second closed end cap, when the filter element is operably installed in the end cover. Methods for installing a filter element in an air cleaner preferably will use constructions as described herein.